

In the Claims

1. (Currently Amended) A method for creating reusable composite components from interpreted pages of a rendered document to be rendered during dynamic document construction, each interpreted page having cacheable reusable document components and non-cached document components, comprising:

obtaining a list of document components associated with an interpreted page cacheable reusable, the list of document components including cacheable reusable document components and non-cached document components associated with the interpreted page; and

identifying the cacheable reusable document components included in the obtained list of documents components associated with the interpreted page any non-cached components;

caching individual each identified cacheable reusable document components rendered to each identified cacheable reusable document component's their respective bounding box dimensions; permuting said reusable document components into composite combinations of reusable document components; and

caching a each of composite combination of a set of identified cacheable reusable document components rendered, relative to each other identified cacheable reusable document component in the composite combination, in a bounding box of sufficient size to adequately contain the composite combination; combining reusable document components in their relative positions to form composite reusable underlays; and caching said composite reusable underlays rendered to full page size.

2. (Currently Amended) A method for rendering pages having a combination of reusable components and non-cached components, comprising:

assessing said rendered page for the possibility of having an underlay-overlay pair;

searching, when the rendered page is accessed as having an underlay-overlay pair, a cache of reusable underlays for underlays having the reusable document components needed by the page;

if the correct reusable underlay is not found in cache then generating a composite reusable underlay from the reusable document components of said page and caching said reusable underlay rendered to full page size;

creating a full page size overlay from the non-cached components that is retained until it is mated with the cached reusable underlay;

if the correct underlay is found in cache then retrieving the reusable underlay; and

rendering, along with the overlay, the page therefrom.

Claims 3-7 (Cancelled)

8. (Previously Presented) An apparatus for processing documents each represented by a document description encoded in a page description language supportive of reusable data, comprising:

a page description language interpreter that receives the document description and parses the document description into reusable document components;

said page description language interpreter combining some of said reusable document components into composites of reusable document components;

said page description language interpreter combining some of said reusable document components with respect to the relative positions of said reusable document components into composites of reusable underlays;

an imager, communicating with the interpreter, that creates image representations of received document components; and

a reusable document component repository that stores image representations derived from a plurality of processed documents, the reusable document component repository communicating with the interpreter and the imager to supply those ones of the image representations corresponding to selected document components of the processed documents and to receive selected image representations created by the imager during the processing of documents.

9. (Previously Presented) The apparatus for processing documents as in claim 8, further comprising a graphical user interface through which an associated user manages the reusable document component repository, the managing including selectively adjusting a repository storage size and selectively deleting image representations.

10. (Original) The apparatus for processing documents as in claim 8, further comprising a compressor that receives and compresses image representations created by the imager, and communicates the compressed image representations to the reusable document component repository.

11. (Original) The apparatus for processing documents as in claim 10 wherein the compressor is integrated into the imager.

12. (Original) The apparatus for processing documents as in claim 8, further comprising a random access memory cache communicating with the interpreter and the reusable document component repository, the random access memory storing at least one most recently used image representation retrieved by the interpreter.

13. (Original) The apparatus for processing documents as in claim 8, further comprising a repository index that indexes image representations stored in the reusable document component repository, the repository index communicating with the interpreter to identify images to be retrieved.

14. (Original) The apparatus for processing documents as in claim 13, further comprising a ping path between the interpreter and the reusable document component repository by which the interpreter pings the reusable document component repository responsive to the repository index indicating that a selected image representation is contained in the reusable document component repository, the pinging directing the reusable document component repository not to delete of the selected image representation.

15. (Original) The apparatus for processing documents as in claim 14, wherein the repository index is integrated into the page description language interpreter.

16. (Original) The apparatus for processing documents as in claim 8, further comprising a printing station that includes the page description language interpreter, the imager, and the reusable document component repository; and an electronic network by which the printing station receives documents for processing.

17. (Previously Presented) A document construction method comprising:
receiving a document description including at least one selected reusable document component and combining some of the reusable document components into composites of reusable document components and combining some of the reusable document components with respect to the relative positions of the reusable document components into composites of reusable underlays;
querying a reusable document component repository containing stored image representations of reusable document components to locate a selected stored image representation corresponding to the selected reusable document component;
conditional upon the querying,
identifying one of the stored image representations as corresponding to the selected reusable document component and retrieving the selected stored image representation corresponding to the selected reusable document component, or,
not identifying one of the stored image representations as corresponding to the selected reusable document component, generating an image representation for the

selected reusable document component, and storing the generated image representation in the reusable document component repository; and

converting the document description to a document image representation, the converting including incorporating the selected or generated image representation corresponding to the selected reusable document into the document image representation.

18. (Original) The document construction method as in claim 17, wherein the step of storing the generated image representation in the reusable document component repository includes associating a life span parameter with the generated image representation; and responsive to an expiration of the life span parameter, removing the corresponding generated image representation from the reusable document component repository.

19. (Original) The document construction method as in claim 18, wherein the step of associating a life span parameter with the generated rasterized image includes associating one of a temporal life span and an indication of permanence with the generated image representation.

20. (Original) The document construction method as in claim 18, wherein the life span parameter is such that the generated image representation remains available in the reusable document component repository for reuse in the construction of subsequent documents.

21. (Original) The document construction method as in claim 17, responsive to a selected user input, further comprising removing the generated image representation from the reusable document component repository.

22. (Original) The document construction method as in claim 17, wherein the querying includes tracking previously generated image representations; and conditional upon the tracking indicating that a previously generated image representation corresponds to the selected reusable document component, verifying the previously

generated image representation currently resides in the reusable document component repository.

23. (Original) The document construction method as in claim 22, wherein the querying further includes conditional upon a successful verifying, marking the previously generated image representation to prevent a removing thereof.

24. (Original) The document construction method as in claim 17, wherein the storing of the generated image representation in the reusable document component repository includes, prior to the storing, compressing the image.

25. (Previously Presented) The document construction method as in claim 17, further comprising storing at least a portion of the reusable document component repository in a random access memory cache.

26. (Previously Presented) The document construction method as in claim 17, further comprising storing the reusable document component repository on a permanent storage device; and storing most recently accessed image representations in a random access memory cache.

27. (Original) The document construction method as in claim 17, further comprising identifying the selected reusable document component as reusable by detecting a reusable document component hint associated with the reusable document component.

28. (Previously Presented) The document construction method as in claim 27, wherein the document description is encoded in a Variable data Intelligent Postscript Printware language.

29. (Previously Presented) The document construction method as in claim 27, wherein the document description is encoded in a Personalized Print Markup Language.

30. (New) The method as claimed in claim 1, further comprising:

caching, to form a composite reusable underlay, a combination of identified cacheable reusable document components rendered, relative to each identified cacheable reusable document component in the combination, to a full page size.

31. (New) A method for creating reusable composite components from interpreted pages of a document to be rendered during dynamic document construction, each interpreted page having cacheable reusable document components and non-cached components, comprising:

obtaining a list of document components associated with an interpreted page cacheable reusable, the list of document components including cacheable reusable document components and non-cached document components associated with the interpreted page;

identifying the cacheable reusable document components included in the obtained list of documents components associated with the interpreted page; and

caching, to form a composite reusable underlay, a combination of identified cacheable reusable document components rendered, relative to each identified cacheable reusable document component in the combination, to a full page size.

32. (New) The method as claimed in claim 31, further comprising:

caching each identified cacheable reusable document component rendered to each identified cacheable reusable document component's respective bounding box dimensions.

33. (New) The method as claimed in claim 31, further comprising:

caching a composite combination of a set of identified cacheable reusable document components rendered, relative to each identified cacheable reusable document component in the composite combination, in a bounding box of sufficient size to adequately contain the composite combination.